

## Amendments to the Claims

1. (Amended) A magnetic recording medium comprising:

a substrate;

a magnetic layer on the substrate and comprising a first ferromagnetic film, a second ferromagnetic film, and a nonferromagnetic film between the first and second ferromagnetic films; and

wherein the magnetic layer has a plurality of concentric data tracks,  
each of the data tracks being [is] patterned along the track into first regions with the first and second ferromagnetic films being antiferromagnetically coupled across the nonferromagnetic film, and second regions with the first and second ferromagnetic films being ferromagnetically coupled, the second regions being magnetically recordable data bits.

6. (Amended) [The medium of claim 1] A magnetic recording medium comprising:

a substrate;

a magnetic layer on the substrate and comprising a first ferromagnetic film, a second ferromagnetic film, and a nonferromagnetic film between the first and second ferromagnetic films; and

wherein the magnetic layer is patterned into first regions with the first and second ferromagnetic films being antiferromagnetically coupled across the nonferromagnetic film, and second regions with the first and second ferromagnetic films being ferromagnetically coupled[.];

wherein the first ferromagnetic film includes an interface film consisting essentially of cobalt located at the interface of the first ferromagnetic film and the nonferromagnetic film.

7. (Amended) [The medium of claim 1] A magnetic recording medium comprising:

a substrate;

a magnetic layer on the substrate and comprising a first ferromagnetic film, a second ferromagnetic film, and a nonferromagnetic film between the first and second ferromagnetic films; and

wherein the magnetic layer is patterned into first regions with the first and second ferromagnetic films being antiferromagnetically coupled across the nonferromagnetic film, and second regions with the first and second ferromagnetic films being ferromagnetically coupled;[.]

wherein the second ferromagnetic film includes an interface film consisting essentially of cobalt located at the interface of the second ferromagnetic film and the nonferromagnetic film.

10. (Amended) A magnetic recording disk comprising:

a substrate;

a nonferromagnetic underlayer on the substrate;

a magnetic recording layer on the underlayer and having a plurality of concentric data tracks, the recording layer comprising a first cobalt alloy ferromagnetic film,

a nonferromagnetic spacer film of a material selected from the group consisting of ruthenium (Ru), chromium (Cr), rhodium (Rh), iridium (Ir), copper (Cu), and their alloys formed on and in contact with the first ferromagnetic film, and a second cobalt alloy ferromagnetic film formed on and in contact with the spacer film, each of the data tracks on the magnetic recording layer being patterned along the track into first regions wherein the spacer film has a thickness sufficient to induce the second ferromagnetic film to be exchange coupled antiferromagnetically to the first ferromagnetic film across the spacer film and second regions wherein the first and second ferromagnetic films are not antiferromagnetically coupled, whereby each of said second regions [produce] produces a magnetic field a predetermined distance above the magnetic layer that is greater than the magnetic field from each of said first regions, the magnetic fields above the second regions representing the data bits along the data track; and

a protective overcoat formed on the magnetic recording layer.

13. (Amended) [The disk of claim 10] A magnetic recording disk comprising:

a substrate;

a nonferromagnetic underlayer on the substrate;

a magnetic recording layer on the underlayer comprising a first cobalt alloy ferromagnetic film, a nonferromagnetic spacer film of a material selected from the group consisting of ruthenium (Ru), chromium (Cr), rhodium (Rh), iridium (Ir), copper (Cu), and their alloys formed on and in contact with the first ferromagnetic film, and a second cobalt alloy ferromagnetic film formed on and in contact with the spacer film, the magnetic

recording layer being patterned into first regions wherein the spacer film has a thickness sufficient to induce the second ferromagnetic film to be exchange coupled antiferromagnetically to the first ferromagnetic film across the spacer film and second regions wherein the first and second ferromagnetic films are not antiferromagnetically coupled, whereby said second regions produce a magnetic field a predetermined distance above the magnetic layer that is greater than the magnetic field from said first regions; and  
a protective overcoat formed on the magnetic recording layer;[.]

wherein the first ferromagnetic film of the recording layer includes an interface film consisting essentially of cobalt located at the interface of the first ferromagnetic film and the spacer film.

14. (Amended) [The disk of claim 10] A magnetic recording disk comprising:

a substrate;

a nonferromagnetic underlayer on the substrate;

a magnetic recording layer on the underlayer comprising a first cobalt alloy ferromagnetic film, a nonferromagnetic spacer film of a material selected from the group consisting of ruthenium (Ru), chromium (Cr), rhodium (Rh), iridium (Ir), copper (Cu), and their alloys formed on and in contact with the first ferromagnetic film, and a second cobalt alloy ferromagnetic film formed on and in contact with the spacer film, the magnetic recording layer being patterned into first regions wherein the spacer film has a thickness sufficient to induce the second ferromagnetic film to be exchange coupled antiferromagnetically to the first ferromagnetic film across the spacer film and second

regions wherein the first and second ferromagnetic films are not antiferromagnetically coupled, whereby said second regions produce a magnetic field a predetermined distance above the magnetic layer that is greater than the magnetic field from said first regions; and a protective overcoat formed on the magnetic recording layer;[.]

wherein the second ferromagnetic film of the recording layer includes an interface film consisting essentially of cobalt located at the interface of the second ferromagnetic film and the spacer film.

15. (New) The disk of claim 1 wherein the second regions are ion-irradiated regions.

16. (New) The disk of claim 10 wherein the second regions are ion-irradiated regions.

**Status of claims (37 CFR § 1.173(c))**

Original claims 1-14 and new claims 15-16 are pending.

Claims 1, 6, 7, 10, 13 and 14 have been amended.

Claims 15 and 16 are new claims.

Support for the amendments to independent claims 1 and 10 can be found throughout the original patent, including the following locations:

Column 1, lines 35-38;

Column 6, lines 43-36;

Column 6, lines 55-60;

Fig. 3 and column 7, line 64 to column 8, line 6; and

Figs 4A-4B and column 8, lines 7-38.

Claims 6-7 and 13-14 are amended to be in independent form by including the limitations of their respective independent claims 1 and 10.

Support for the new dependent claims 15 and 16 can be found throughout the original patent, including the following locations:

Column 5, lines 53-65; and

Fig. 3 and column 7, line 64 to column 8, line 7.

**Offer to surrender the original patent (37 CFR § 1.178(a))**

The assignee of the original patent, Hitachi Global Storage Technologies Netherlands B.V., hereby offers to surrender the original patent US 6,391,430 as part of this Reissue application.

The Examiner is invited to call applicants' undersigned attorney if a telephone conference will expedite the prosecution of this application.

Respectfully submitted,

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